

# Introduction

Fermilab

PPD Mechanical Department

Process Engineering Group

# General Considerations

- Dew Point
- Pressure Head
- Barometric Pressure
- Tube Sizes
- Mixing Systems
- Cost Considerations

# Dew Point

Temp [C]	Pressure [kPa]
-40	84.5
-35	108.6
-30	137.8
-25	172.8
-20	214.3
-15	263.5
-10	320.7
0	463.3
10	649.7
20	887.7
30	1185.5
40	1552.2

# Mixing Systems

- Fermilab example
- Similar to RPC
- 0.5% mixture accuracy in single stage dependant on flow meters
- Improved accuracy with gas analysis and batch testing
- CDF binary mixture, 500 ppm accuracy

# Cost Considerations

- Tubing and Valve Material
- Container Flow Paths
  - Parallel vs. Series flow
  - Filter Cost Example
- Electric vs. manual valves
- Instrumentation

# Filter/Orifice Example



Sintered Metal Filter

1/8 inch Stainless, \$43.20 each, Qty 1

1/8 inch Stainless, \$30.68 each, Qty 2000

1/8 inch Brass, \$14.13 each, Qty 2000